June 20, 1944. F. S. GLUCK 2,351,756

ART OF KNITTING GLOVES AND THE LIKE

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Fig.1

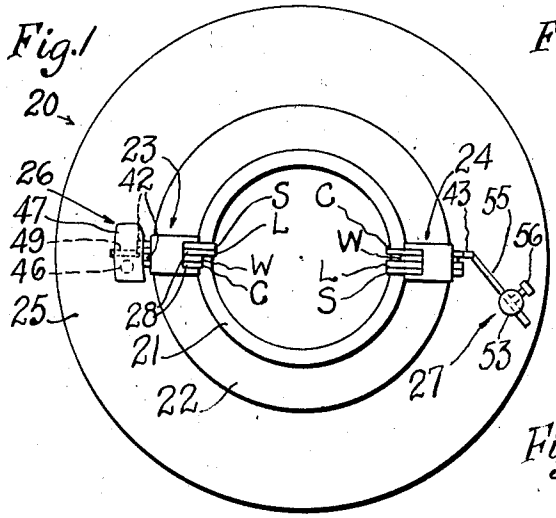


Fig.2

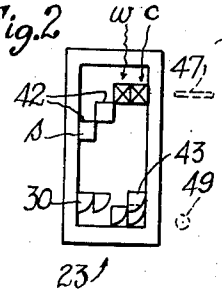


Fig.3

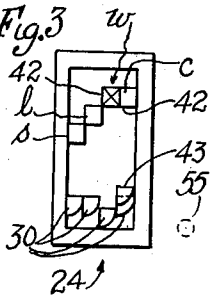


Fig.7

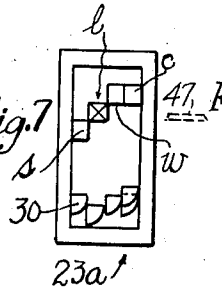


Fig.8

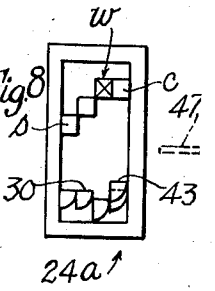


Fig.6

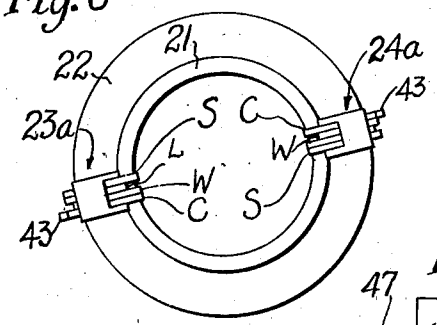


Fig.4

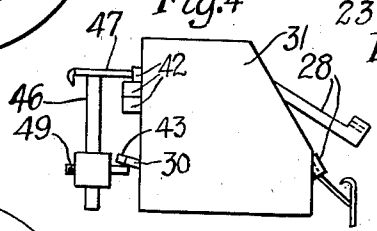


Fig.10

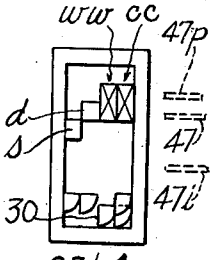


Fig.11

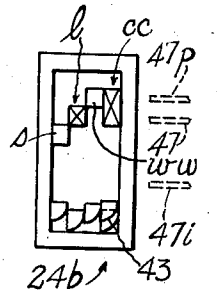


Fig.9

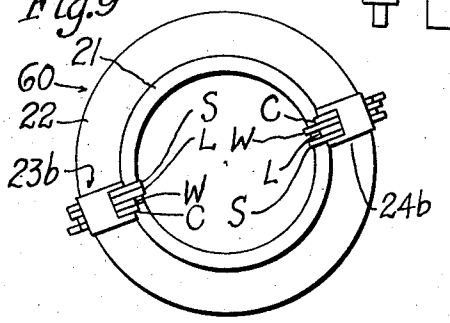
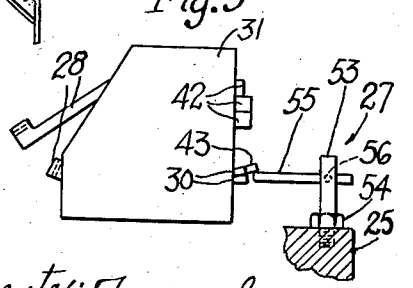


Fig.5



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Fig. 12

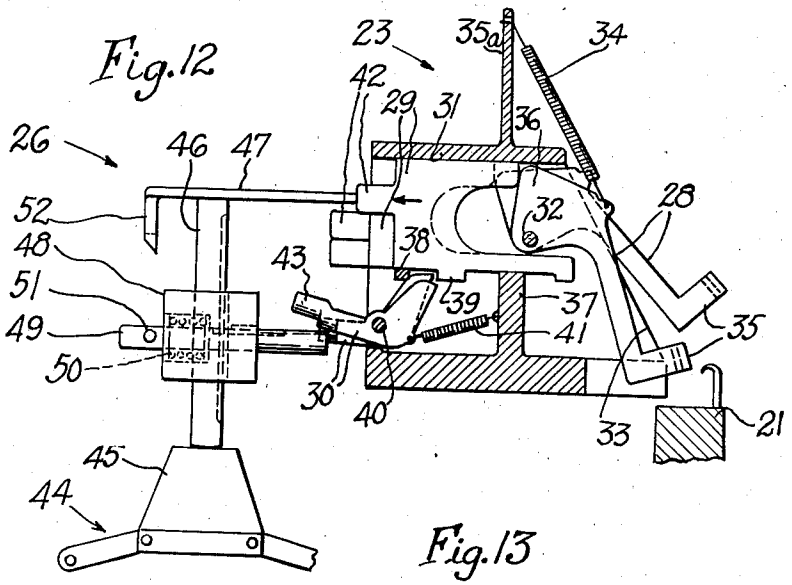


Fig. 13

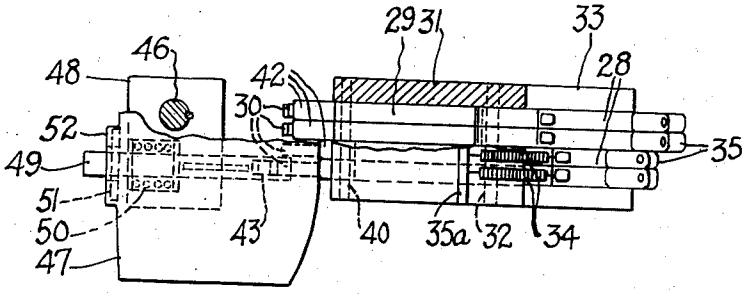


Fig. 15

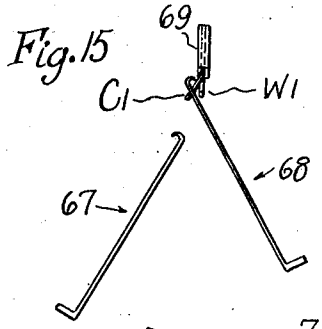


Fig. 16

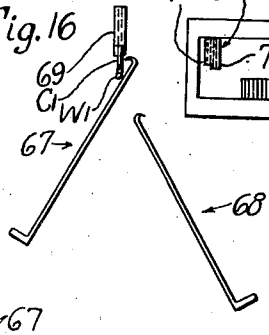
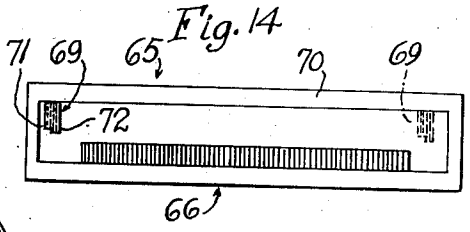


Fig. 14



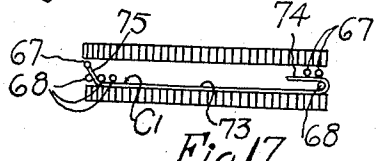


Fig. 17

Inventor:
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Patented June 20, 1944 2,351,756

UNITED STATES PATENT OFFICE

2,351,756

ART OF KNITTING GLOVES AND THE LIKE

Fred S. Gluck, New York, N. Y., assignor, by mesne assignments, to Waldorf Knitting Company, a limited partnership of New York, consisting of Fred S. Gluck and Claus K. Abeles, as general partners, and Ica Waldes, Sigmund Waldes, Ida Waldes, and Harry Waldes, as limited partners

Application July 15, 1942, Serial No. 451,059

10 Claims. (Cl. 66—133)

This invention relates to the knitting of tubular articles such as gloves.

One object of the invention is to provide an improvement in the art of knitting a tubular article such as a glove, a sleeve and the like, such that a reenforcement is integrally knitted into the article to increase the strength of that side thereof which is the principal wear resisting portion, while the other side is relatively free of the reenforcement yarn so that its softness or stretchability is maintained. This improvement may be readily understood in connection with woolen gloves, in which the palm portion is often quickly destroyed by rough usage. It is a feature of this improvement that the life of the glove is increased several times over that of the best woolen gloove lacking this reenforcement, while the warmth of the improved glove is subsantially maintained and becomes proportionately greater as it is subjected to wear.

Another object of the invention is to provide improved methods and apparatus for knitting such a tubular article or glove, and particularly to furnish an improved circular knitting machine for this purpose.

Another object of the invention is to provide improvements in the art for knitting a tubular article or glove as set forth, wherein the reenforcement area may terminate at the ribbed cuff or wrist portion of the glove, or may at will include one side of the said cuff or wrist portion, so that the glove may be said to be reenforced throughout, especially as the fingers and thumb may be similarly reenforced by improvements on a flat knitting machine hereinafter referred to.

The invention herein described is an improvement over, and a continuation in part of my applications Serial Nos. 438,489 and 438,490, both filed on the 10th day of April, 1942.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated on the annexed drawings, wherein like parts are designated by the same reference characters throughout the several views.

In the drawings:

Figure 1 is a schematic plan view of part of a circular knitting machine embodying the invention set for knitting the body of a glove, and showing a pair of yarn control heads, a yarn change means at the left, and a yarn shifter means at the right.

Figs. 2 and 3 are enlarged views in end elevation showing yarn control heads corresponding to those of Fig. 1, with parts of the yarn change or selector means shown in dotted lines.

Fig. 4 is a schematic view in side elevation showing the yarn change means operating a yarn control head.

Fig. 5 is a similar view showing the yarn shifter means operating a yarn control head.

Fig. 6 is a schematic plan view of part of the machine of Fig. 1, but with the yarn carrier elements of the heads set to knit the cuff or wrist portion of the glove without reenforcement yarn.

Figs. 7 and 8 are schematic enlarged end views of the different yarn controls, set according to Fig. 6, the change actuator plate being shown in dotted lines in the second position in Fig. 7 and in third and zero positions in Fig. 8.

Fig. 9 is a schematic plan view of a portion of the machine set to knit the cuff of a glove with the use of modified yarn control means to provide reenforcement for one side of the cuff, and showing yarn carrier elements in position for that purpose.

Figs. 10 and 11 are schematic enlarged end views of the different yarn control heads corresponding to Fig. 9, with the change plate being shown in dotted lines.

Fig. 12 is an enlarged diagrammatic fragmentary side view with parts in section showing the yarn change means operating the yarn control means.

Fig. 13 is a fragmentary plan view thereof with parts removed, and other parts in section.

Fig. 14 is a view in side elevation of a portion of a flat knitting machine for making finger portions of a glove, with the improved yarn carrier also shown in dotted lines in its other end position.

Fig. 15 is a diagrammatic transverse view thereof showing the yarn carrier feeding only wool yarns to the needles of one row.

Fig. 16 is a similar view showing the yarn carrier upon reverse travel feeding both wool and cotton reenforcement yarns to the needles of the other row.

Fig. 17 is a schematic view of the cotton course.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to

which this invention appertains, that the same may be incorporated in several different constructions. The accompanying drawings, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawings, 20 denotes a circular knitting machine embodying the invention. The same may include means 21 (schematically shown) for mounting and operating an annular row of needles. A plurality of members, one of which is rotatable relatively to the other, may include a first rotary member 22 which may carry one or more yarn control means such as the heads 23, 24 and a second or base member 25 which may carry the needle operating means 21, a yarn change means 26 and a yarn shifter means 27. The needles are the usual hooked needles successively reciprocated vertically in a conventional manner. The yarn change heads 23 and 24 are alike, except as otherwise described. Each may include a plurality of yarn carriers such as 28 and individual actuator or holding means therefor. Each holding means may include a pusher plate 29 and a trip or actuator finger 30. The carrier elements and the holding means are mounted in a housing such as 31 so as to be responsive to the change means 26 and the shifter means 27.

The yarn carrier elements and their holding means are illustrative of one desirable construction. The carrier elements are pivotally mounted on a rod 32 fixed in the side walls 33 of the housing 31. Tension coil springs 34 connect the flange 35*a* of the housing with the individual carrier elements so as to tend to move radially inward the yarn guiding eyes 35 of these elements to cause them to lie out of feeding relation to the needles. In Fig. 12, a carrier element is shown pivotally moved so that its eye 35 is retracted in a radially outward direction into position to lay yarn into the needle hooks. This operative position of a carrier element is caused by its pusher plate 29 upon inward radial movement thereof and consequent actuation of the angular portion 36 of the carrier element against the tension of the coil spring 34. Each pusher plate may be fitted in the housing 31 for sliding movement, and for clearance, it may rest on a ledge 37 and on a bar 38 fixed on the side walls 33. The spring 34 causes the pusher plate 29 to move outward, and its throw may be limited by a projection 39 engageable, for instance, with the bar 38. The fingers 30 are all pivotally mounted on a rod 40 in the side walls 33 and tension coil springs 41 individually connect them with the ledge 37 so as to tilt them counterclockwise into locking relation with the projections 39 to cause the pusher plates 29 to keep the yarn carriers 28 in feeding relation to the needles. The carriers 28, the pusher plates 29 and the fingers 30 are all identical, except that the pusher plates have cam actuated projections or follower portions 42 at different elevations, and one of the series of fingers is provided with an extension 43 either endwise or lateral or both for engagement by a release member of the yarn change means 26.

The yarn change means 26 may comprise any control means such as a series of pattern chains one of which is shown in part at 44. The latter may have suitably selectively arranged links or plates 45 serving to raise a bar 46 at the upper end of which is fixed a cam or change member 47. Guiding the bar 46 is a head 48 having a transversely slidable pin or releasing member 49 which is urged toward the right by an expansion coil spring 50 housed in the head. The releasing member is retracted toward the left by its cross pin 51 engageable by a wedge-like cam 52 on the change plate 47 operative only when the change plate drops gravitationally or by spring pressure to an inoperative position. By making the links 45 of different heights, the change plate 47 is selectively elevated to different positions for engagement with the correspondingly elevated portions 42 of the pusher plates 29. In all such operative positions the releasing member 49 is projected to ride under and thus engage the fingers 30 to tilt the same clockwise as in Fig. 12 to release projections 39 of the pusher plates so that the latter are free for outward movement by the springs 34. Hence any and all carrier elements 28 are thrown out of yarn feeding relation and only the selected carrier will be moved to or retained in yarn feeding position. In other words, the cam plate 47 and the release 49 act simultaneously, but the cam plate continues to act after the release has passed the fingers to assure that the selected pusher plate 29 shall remain locked by its trip finger 30. When the cam plate 47 moves below the elevation of all the projections 42, then the cam 52 engages the pin 51 and retracts the release 49 to inoperative position.

The shifter means 27 serves to trip a particular finger 30 when only a part of the knitting course has been completed, so that the first part of the course knits as determined by the yarn change means 26 and the rest of the course knits as modified by the yarn shifter means. The latter may be adjustable if desired so that this modification may occur at any point in the course. Thus it may be independent of the yarn change means and of the pattern chain, and is very simple in construction. For instance, it may include a vertical bar 53, see Fig. 5, threaded into or otherwise rotatably secured thereto, and locked as by a locknut 54. A shifter rod 55 may be slidably mounted in a hole in the bar 53 and locked as by a set screw 56. The operative end of the rod 55 may be suitably beveled or cam shaped for easy engagement with the extension 43 of a trip finger 30. It is in order to prevent the shifter arm 55 from accidentally engaging any other trip finger that the extension 43 is provided. When this tripping occurs, the carrier element 28, corresponding to the finger having said extension, moves out of yarn feeding position.

The machine set up as shown in Fig. 1 is adapted to knit the main wear resisting portion of a tubular article such as a glove or sleeve, with a suitable, preferably heavy wool yarn, one side of the article having a cotton, linen or other strong reenforcement yarn. Thus the palm portion of a glove can be strongly reenforced so that its life is increased several times. In thus knitting an article, the setting for both heads 23 and 24 may be identical so that only one head need be used, except that a plurality of heads speed up the knitting. For clarity, the different carrier elements are designated by the letters C, W, L and S corresponding to cotton, wool, light wool, and separating thread; this designation is also employed in Figs. 6 and 9. The corresponding pusher plates 29 are designated as *c*, *w*, *l* and *s*. Those projections 42 of those pusher plates which are inward and hence have moved their carrier elements 28 to yarn feeding positions are marked with cross lines in the manner of an X. It will now be seen that Figs. 1 and 2 clearly show the head 23 with the pusher plates *w*, *c*, and their yarn carriers W and C in position for

causing the feed of heavy wool and reenforcement cotton to the needles. It is important to note that the projections **42** of these pusher plates are at the same elevation, which is also that of the cam or change plate **47** that has caused them to move the yarn carriers C and W to feeding position, the other yarn carriers L and S having been caused to move out of feeding position due to the tripping and release of their holding devices by the releasing pin **49**. This precise action is also repeated for the yarn control head **24**, the fingers **30** being shown upwardly tilted to release the pusher plates *s* and *l*. However, Fig. 3 shows a head such as **24** after movement past the shifting means **27**, engagement of the finger extension **43** and consequent release of the pusher plate with the carrier C for the reenforcement cotton moving out of feeding position. If the end of the bar **55** is diametrically opposite to the yarn change means **26**, one half of the tubular article knitted will have the reenforcement cotton, this desirably corresponding to the palm portion of a glove, the other half, corresponding to the back of the glove, will be free of the reenforcement and hence will have the requisite form-fitting stretchability. The operation indicated by Fig. 3 is repeated for each head, so that the shifter means **27** acts twice during each knitting course. Upon returning to the change means **23**, the change plate or cam **47** moves the pusher plate *c* inward, the projection **39** thereof riding over the angular toe of its finger **30** which then snaps into position to lock the pusher plate and retain the carrier C in cotton feeding position. Should it be desired to increase or decrease the reenforced area, the point of operation of the shifter means **27** may be varied, as by turning the standard **53** and suitably adjusting the length of the shifter bar **55**, and then tightening the locknut **54** and the set screw **56**.

In Figs. 6, 7 and 8 is shown the art of knitting the cuff or wrist portion of a glove, without the reenforcement cotton, but with the usual knit formed by a heavy wool yarn and a light wool yarn. This is attained without any change in the machine, the setting being automatically accomplished by coordination with the usual pattern chain control means. For clarity, the yarn control heads will now be designated **23***a* and **24***a*, and preferably two heads are used so that the light and heavy wool yarns are individually supplied by them to the needles. For this purpose, the cam or change plate **47** is moved by its pattern chain such as **44** to a different elevation which is such as to cause the change plate to engage the projection **42** of the pusher plate *l* of the head **23***a* to cause the carrier **28** for the light wool yarn to be moved to feeding position, with certain other carriers **28** moving to non-feeding position by reason of the tripping and release of their holding means **29, 30** by the release member **49** of the change means **26**. Because the pusher plate *w* of the head **24***a* has its projection at a different elevation than that of the pusher plate *l*, a novel order of operations is used as follows. As the shifter means **27** throws out the reenforcement cotton for both heads as hereinbefore described, the head **23***a* upon moving past the yarn change means **26**, has its pusher plate *w* released, while the change plate **47** causes the pusher plate *l* to be locked in position to cause feeding of the light wool yarn. Then the change plate **47** moves to the inoperative position shown in Fig. 8, with the releasing member **49** also in inoperative position by the action of the cam **52** on the pin **51**. Now as the head **24***a* moves past the change means it is not affected at all, so that the heavy wool pusher plate *w* remains in locked position obtained in Fig. 3. During the knitting of the cuff, the change plate **47** remains continuously in the position shown in Fig. 8 so that the knitting proceeds as indicated in Fig. 6. Such a cuff affords maximum stretchability but in many cases it is desirable to knit the underside of the cuff with reenforcement cotton for increased durability. This will now be described.

To extend the cotton reenforcement yarn from the palm portion of the glove into the wrist or cuff portion thereof, a modified machine **60** (Fig. 9) may be used. But as hereinafter described this machine **60** may also be used to perform the functions indicated in Figs. 1 and 6. This machine is constructed like that at **20** and operates in the same manner except as described. It may include yarn control heads **23***b* and **24***b*. The former may have the projections **42** of two pusher plates vertically enlarged to overlap the elevation of the projection of an adjacent pusher plate. The pusher plates having the enlarged projections are denoted as *cc* and *ww* for the cotton reenforcement and the heavy wool yarns, respectively. On the head **24***b*, the projection **42** of one pusher plate is similarly enlarged, the latter being designated as *cc*, for the cotton reenforcement yarn. Hence the projection **42** thereof overlaps the projection of the adjacent pusher plate denoted as *l* for the light wool yarn. Thus with the change plate **47** being in one position as indicated in dotted lines in Figs. 10 and 11, it causes locking of the pusher plates *cc* and *ww* in the head **23***b* and of the pusher plates *cc* and *l* of the head **24***b*. Hence the head **23***b* causes the feed of reenforcement cotton and heavy wool, and the head **24***b* causes the feed of said cotton and of the light wool. It will be noted that the pusher plate *w* of the head **24***b* is not operated, being out of the path of the change plate **47**. In the head **23***b*, the pusher plate designated as *d* may be operated, being in the path of the change plate, but its carrier **28** may be free of any yarn.

If it be desired to use the machine **60** to knit a cuff without any reenforcement, this may be accomplished by the change plate **47** moving to the positions shown in Figs. 10 and 11 to act once upon each head and then to move to inoperative position indicated at **47***i* as described in connection with Fig. 8. Now, as each head moves past the shifter means **27**, the pusher plates *cc* are released so that neither head feeds reenforcement cotton to the needles. Thus the head **23***b* will feed only heavy wool yarn and the head **24***b* will feed only light wool yarn.

Likewise the machine **60** may be used to perform the functions of the heads **23** and **24** to knit the body of the glove with the reenforced palm. For this purpose the change plate **47** may be moved to the position indicated at **47***p*, thus clearing the projection of the pusher plate *l* for the light wool, but acting upon the pusher plate *ww* for the heavy wool, as may be seen in Fig. 11. Hence the pusher plate may remain in one position and cause both heads **23***b* and **24***b* to feed heavy wool and reenforcement cotton to the needles, subject to the action of the shifter means **27** in throwing out the cotton as hereinbefore described. Thus it is seen that the machine **60** accomplishes all the functions of the machine **20** and can perform an additional operation.

The process of knitting will be evident from the description of the machines **20** and **60**. It will suffice to add that for the usual continuous knit-

ting, a separating portion is knitted between successive gloves, and is subsequently cut through to separate the gloves. This portion may be knitted out of any cheap strong yarn by the action of the yarn change means 26, the yarn control means and the needles. The pusher plates *s* may be used with their carrrier elements S, these being like the members 29 and 28, and being operable by movement of the change plate 47 to a different elevation to actuate the projections 42 of the pusher plates *s*, while the releasing member 49 causes release of the other pusher plates.

For knitting the finger and thumb portions of a glove, the circular machine is too large and hence a flat knitting machine such as 65 is employed. The same may have an elongated needle bed or means 66 for operatively mounting and actuating two needle rows 67 and 68. These rows of needles lie in planes intersecting each other at equal angles with the vertical, and the needles of one row 68 are successively reciprocated from left to right, then the needles of the row 67 are successively reciprocated from right to left. Because of the usual cam action for causing the reciprocations, the reciprocations of successive needles overlap in the usual manner, so that several needles are reciprocated simultaneously but one being in advance of the other in the manner of an inclined line or curve. Cooperating with the needle operating means is a yarn carrier 69, so arranged that when it is at an end of the needle bed, as shown in full and dotted lines in Fig. 14, all the needles are retracted. This yarn carrier is reciprocated at a constant elevation synchronously or in timed relation to the needles, by mechanism 70 cooperating with the means 66 in the usual manner. The yarn carrier 69 has a plurality of holes or eyes 71, 72 for the reenforcement cotton and for the heavy wool respectively, thus forming in effect a plurality of yarn carrier portions or elements. The portion at 71 is at a slightly higher elevation for clearance than that at 72. It is important to note that the yarn carrier 69 lies in the central vertical plane of the machine, with the eyes 71, 72 lying in and moving along said plane. By reason of proper timing of the yarn carrier relative to the needles, and the positional relation of these parts, when the yarn carrier 69 moves from left to right with the needles 68 operating and the cotton reenforcement yarn *Cl* being at the left of the yarn carrier, the heavy wool *Wl* is disposed over the retracting needles 68 so as to be engaged in their hooks, but the cotton yarn is too late and drops under the needles and hence is not caught in their hooks. Thus the needles 68 stitch only with the heavy wool yarn. When the yarn carrier 69 starts from right to left, the timing and positional relationship is such that both the yarns *Cl* and *Wl* are caught in the needle hooks so that the needles 67 knit with both cotton reenforcement and heavy wool yarns simultaneously. Thus the underside of the finger and thumb portions are reenforced like the palm portion of the glove, and are subsequently secured or knitted to the hand part of the glove in a manner well known in the art.

The timing and positional relations mentioned can be obtained by suitable timing of the needles by their cams, or by making the position of the yarn carrier 69 more remote from the ends of the needle bed at the left than at the right thereof.

In Fig. 17 is shown a schematic plan view indicating the course of the cotton *Cl*. It is important that the latter shall lie back of the needles 68, as in Fig. 15, so that the extreme end needle 68 at the left in Fig. 17 shall form an anchorage for the cotton float 73 and assure that this cotton *Cl* shall be fed to the needles 67 as at 74 upon reverse travel of the yarn carrier 69, to the left. The movement of the float 73 to the back or underside of the needles 68 is effected because the cotton *Cl* is anchored at the extreme left at an end needle 67 so that it follows an angular course as at 75 when the yarn carriers move toward the right, and hence the cotton is knitted by the first needle 68 at the left, because it is sufficiently in front of this needle to fall under the hook thereof. Since the point of anchorage of the cotton is thus shifted to the needle row at 68, the cotton drops to the rear or underside of the succeeding needles 68 as shown in Fig. 17. These results are thus accomplished merely by spacing the yarn carrier 69 further from the left than from the right end of the needle bed, and otherwise leaving the yarn carrier and the needles to follow their normal course and operation.

I claim:

1. A circular knitting machine having yarn carrier elements for the needles, actuator elements individually adapted to be projected for moving the carrier elements into yarn feeding relation to the needles, locking elements responsive to the actuator elements in their projected positions for individually locking the actuator elements to maintain the carrier elements in yarn feeding relation to the needles, said locking elements being individually releasable and so cooperating with the carrier and actuator elements that the carrier elements move out of yarn feeding position upon release of the locking elements, a pair of the actuator elements having extensions at a like elevation, control means including a vertically movable selector cam member for engaging said extensions to cause the actuator elements to hold the carrier elements in yarn feeding position irrespective of the locking elements, a releasing member adjacent to the cam member for moving the locking elements to released position, so that those actuator elements that are engaged by the cam member are locked by the locking elements after the latter are disengaged from the releasing member, said control means and said carrier elements being angularly movable relatively to each other, one of the locking elements corresponding to said pair of carrier elements having a projection extending beyond the other locking elements, and a non-selective shifter means angularly remote from said control means for engaging said projection to release the locking element thereof for causing movement of the corresponding carrier element out of yarn feeding position without affecting the other locking elements.

2. A circular knitting machine including rotary means comprising yarn carrier elements movable into and out of yarn feeding position relative to the needles, means for operating said carrier elements including an actuator member for each element, a locking member for each actuator member, the actuator member being projectible to move its element to yarn feeding position, the locking member serving to releasably lock the actuator member in projected position and being operative only in the projected position of the actuator member, means includ-

ing a cam member, a releasing member, and a shifter means, the cam member being movable to different selected positions relative to the actuator members, the releasing member serving to release the locking members, a pair of the actuator members having means simultaneously engageable with the cam member to remain in projected position after the releasing member has disengaged the locking members so that the latter lock their actuator members in projected position, one of the locking members for said pair being longer than the other, said shifter means being non-selective and being remote from the release member and engaging the longer locking member to release the same without affecting the other locking members.

3. A circular knitting machine having means rotatable relatively to a needle bed, said means including yarn carrier elements, said means being normally urged to a position in which the yarn carrier elements lie out of yarn feeding position, releasably locking members cooperating with the yarn carrier elements to maintain them in yarn feeding position, said locking elements being normally urged into locking position, means for selectively causing the yarn carrier elements to move to and from yarn feeding position, including releasing means for moving the locking elements out of locking position during the selection, said rotatable means having means cooperating with the selector means so that a pair of carrier elements is caused to lie at the same time in yarn feeding position, and nonselective, shifter means spaced from the releasing means, the shifter means and a locking element corresponding to one of said pair of carrier elements having means such that the shifter means moves that locking element to unlocking position without affecting the other locking element.

4. A circular knitting machine having yarn carrier elements for the needles and having means for the yarn carrier elements including automatic means for holding the carrier elements in yarn feeding relation to the needles, and including a portion for one carrier element different from corresponding portions for the other elements, releasing means for the holding means, and selector means to hold a selected carrier element in feeding position during operation of the releasing means so that the holding means can again automatically engage the carrier element in yarn feeding position, and a nonselective shifter means for engaging said different portion and causing release from feeding position of only said one of the carrier elements after a portion of a course of knitting has been completed.

5. A circular knitting machine including yarn control means comprising yarn carrier elements for the needles, and locking portions for the different elements, one of which locking portions extends beyond the others, selector means for the yarn control means and a shifter means disposed to engage the extended locking portion to cause its carrier element to move out of yarn feeding position after completion of a portion of a course of knitting.

6. A circular knitting machine according to claim 5 wherein the shifter means includes means for adjusting its operative relation to the said extended locking portion to actuate the latter at a selected point during the knitting of a course.

7. A circular knitting machine including rotary means comprising yarn carrier elements for the needles movable to a first position for feeding yarn to the needles and to a second position in which the elements are incapable of feeding yarn to the needles, individual actuator means for each carrier element including a first member to cause the carrier element to move to the first position and a second member to cause the carrier element to move to the second position, change means for affecting the carrier elements including a first means and a second means, the latter actuating the second member and the first means actuating the first member during and after actuation of the second member by the second means, the first members having projections and the first means being selectively movable to different positions to engage the projections of selected first members, a pair of the first members having their projections in a like position for simultaneous actuation by the first means, and other means remote from the change means cooperating with the second members so as to actuate only one of those second members corresponding to said pair of first members.

8. A circular knitting machine including means rotatable relatively to a needle bed, comprising carrier elements for the needles movable to and from yarn feeding relation to the needles, change means for controlling said movement of the carrier elements comprising a first means selectively movable to different positions, and a second means cooperating with the first means, the rotatable means having individual means for actuating the carrier elements, each including a first portion engageable with the said first means and a second portion engageable by the second means, the first and second means cooperating with said portions so that the first means is adapted to selectively set the different carrier elements in or out of yarn feeding position, with the first portion causing its carrier element to move to yarn feeding position and the second portion causing the carrier element to move out of yarn feeding position, a pair of said carrier elements having their corresponding first portions in position for simultaneous actuation by the said first means, and shifter means remote from the change means, the shifter means and one of the second portions corresponding to a carrier element of said pair having means so as to be actuable by the shifter means without actuating another second portion.

9. A circular knitting machine according to claim 8 wherein one of said first portions corresponding to said pair of carrier elements is so related to said first means as to be actuable thereby in different positions of the first means whereby one or both of said pair of first members are actuable at will, a second rotatable means being provided operative and constructed like the first mentioned rotatable means except that both of the said first portions corresponding to said pair of carrier elements are so related to said first means as to be actuable thereby in both of the different positions of the first means mentioned for the first rotatable means.

10. A circular knitting machine according to claim 8 wherein the shifter means includes a rigid, stationary arm an end of which is adapted to operatively engage said one of the second portions and means mounting said arm for adjusting angular and longitudinal movement to determine the point at which said arm is operative as aforementioned.

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